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ABSTRACT

This paper discusses the ethical and practical issues involved in the development and implementation of a preschool screening battery. A screening program is described and the resulting data presented in an attempt to illustrate the investment in time, money, and energy required. The ethical questions that arise because of the lack of cross-validation studies are discussed. It is suggested that the effectiveness of screening batteries has not been compared with other approaches which might be more economical and equally effective. In particular, the use of parent questionnaires offers possibilities because they provide the practitioner with more information than the simple referral of a child who has been identified by an informed parent, nursery school director, or primary grade teacher. The ability to generalize from any research data to the specific population to be considered for screening is open to question and validation of any screening technique is still needed to ensure that the effectiveness reported in the normative studies applies to the population being studied. (Author/SB)

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# ETHICS, ISSUES, AND PROCEDURES IN SCHOOL-READINESS SCREENING

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Interest in early screening, with the implications for early detection and increased probability of successful intervention[3], has waxed and waned throughout the history of education. Recently, there has been a resurgence of interest in this area; partly this has occurred because state legislatures have rewritten special education laws to require school districts to begin providing services to broadly defined groups of "handicapped" children for whom needs have been shown.[10,12] Another factor producing increased interest is the emphasis given to "early and periodic screening" as part of public health-care delivery systems implemented throughout the country.

These factors have given impetus to the publication of a remarkable array of materials for school systems, mental health centers, public health workers, or other community agencies to use in identifying childrer in the "risk" category for having difficulty in school. Unfortunately, the plethora of evaluation and assessment instruments has not produced a similar plethora of information and studies on the validity and reliability of these instruments.[7,11]

About 5 years ago, I was invited to participate in the development of screening materials that would be used as one portion of a preschool examination to be carried out in a pediatric setting. As this work was carried out, a number of pertinent issues were raised, issues which I believe must be resolved by any responsible psychologist who becomes involved

in such a task. These issues fall into two overlapping areas: (1) ethical considerations and (2) matters of practicality or efficiency. Illustrative questions from each area are listed below.

## Ethics

1. Given the paucity of data regarding reliability and validity, can one justify the use of a screening program?

2. Does the cost of the program, in terms of time and money, effort, and inconvenience to the client, balance favorably with the anticipated yield?

3. Should one initiate a screening program without provision for subsequent detailed examination and intervention or follow-up?

4. What are the possible harmful effects of participation in screening (e.g., the stigma of adverse diagnostic "labeling," or the possibility of a negative self-fulfilling prophecy), and how will any possible negative consequences be conveyed to the parents so that a truly "informed consent" for participation in the screening program can be obtained?

5. If carried out in a setting other than school, how will the confidential nature of the findings be maintained and conveyed to other concerned parties?

6. What is the probability of obtaining a false-positive or a false-negative diagnosis and how will each be managed?

## Practical Issues

1. What are the specific goals for carrying out the screening program (e.g., research, intervention, further evaluation, school program "tracking")?

2. In general, who shall be empowered to carry out this screening plan (e.g., public health center, public schools, private medical center)?

3. Who shall be trained to carry out the assessment procedures?

4. Who shall be given the authority and responsibility for interpreting the data to parents or school personnel, or both, and for making follow-up arrangements?

5. At what point shall screening be carried out (e.g., chronologic age 4, at parent's request, at physician's request, before the start of kindergarten)?

6. For what criterion or criteria should one screen (e.g., borderline intelligence or mental retardation, specific learning disabilities, emotional disturbance and behavior problems, reading disability)?

7. How much time and cost per client are required for scoring, interpreting, and completing the screening? Who shall bear the burden of this cost?

8. What are the particular idiosyncrasies of the population you wish to screen (e.g., socioeconomic status, ethnic background, rural or urban, preschool experiences)?

## Implementation

As an example of the preliminary development of a screening program and subsequent follow-up, I would like to share a portion of my experience with you.

At this point I will interject my strong feeling that one should be cautious about generalizing from the results of another screening study to your own population. Other researchers may generate data quite stimulating to the development of your program but it is important that cross-validation be carried out on your own sample. I am convinced that every population has significant idiosyncrasies which must be taken into account.

Therefore, let me describe something of the area in which I work. Rochester is a small, midwestern city of about 55,000 people. It has a very large international company producing business machines, computers, and associated hardware and software, and a large medical diagnostic center with two associated hospitals and a medical school. There are other numerous smaller manufacturing and service businesses as well. One begins to understand the socio-economic level of the community by learning that about 1 out of every 50 residents of this city is a physician and probably another 1 out of every 50 holds an engineering degree of some type. There are two Montessori schools, three large nursery school programs that have been established since the days

when Dr. Benjamin Spock was at the Mayo Clinic, and many other nursery school and day-care facilities. These include several that are geared to intervening in behalf of preschool children having various types of social, emotional, or physical handicaps.

The development of our screening program took place over several years, and indeed must still be considered to be in the pilot stage. The impetus for the program came from physicians in the Section of Community Pediatrics who wished to add a preschool readiness component to the preschool examination. After a review of the literature[4,8-10], a "battery" of tests, already in existence and requiring from 10 to 20 minutes to administer, was assembled. The battery consisted of four parts: (1) intellectual evaluation, (2) observation of behavior, (3) assessment of prereading and number skills, and (4) determination of level of language development[6].

The Vane Kindergarten Test (VKT) was selected for the intellectual portion of the battery because it contained subtests of vocabulary, visual-perceptual, and fine-motor skills. A schedule of observations provided a systematic means for assessing unusual or maladaptive behavior exhibited by the child during the evaluation session.

The prereading and number readiness task was carried out with the lower levels of the Wide Range Achievement Test (WRAT), chosen because they most closely approximate the academic tasks with which the child will be faced in school.

An estimate of vocabulary level is included in the VKT but it was thought to be important to obtain some information about the child's typical use of language outside the examination room. Therefore, a questionnaire based on the Meacham verbal language development scale was devised. This questionnaire required the parent to describe the child's development of grammar, syntax, and vocabulary.

Parents accompanying their children for preschool pediatric examination were invited to participate in the school-readiness screen, so the sample is relatively self-selected. However, we obtained subjects from our local public health center as well. The distribution of scores indicated that we had a suitably representative sample of the population of preschool children in the area, based on group tests administered to the kindergarten children of the city during the previous years.

The screening battery was carried out by a technician under supervision of a staff psychologist. Graduate and undergraduate students in psychology were used with equal success after a short period of intensive training. Brief reports were written by the technician, following a format devised for this purpose. The results were then discussed with the child's parents by the psychologist or pediatrician. Using the norms provided for each of the instruments, supplemented by clinical experience, general statements about the degree

of risk for school difficulty were then made. However, because we had no follow-up data, our strongest "intervention" statements either requested further evaluation of the child or recommended that the classroom teacher be contacted by the parents in order to sensitize her to possible difficulties that that child might have in kindergarten.

The second stage of our pilot program consisted of obtaining follow-up information about the progress these children made over the course of the year. Therefore, 135 children out of the total sample of 165 who had originally been evaluated were reexamined at the end of kindergarten.

Follow-up provided both objective and subjective data. The objective data consisted of the child's knowledge of letters and numbers and were obtained from the lower levels of the Wide Range Achievement Test. Subjective data consisted of a 5-item rating scale on which the classroom teacher estimated readiness for first-grade reading and arithmetic and mastery of the kindergarten program just completed.

When these data were analyzed it was found that the best predictor of objectively measured reading skill was a combination of scores earned on the child's knowledge of letters, the perceptual-motor IQ score on the VKT, and socio-economic status as determined by membership in the public health center group or the private practice group (multiple $\underline{r} = 0.69$).

The best predictor of objectively assessed number skills was a combination of scores earned on the child's knowledge of numbers and letters, the child's sex, and the child's language skill as described by parents (multiple $r = 0.72$).

These group data, as well as information from individual cases which we followed up (e.g., when mild mental retardation or borderline intelligence was suspected or when youngsters were thought to be more appropriately placed in a "transition" class before entering first grade), suggested that the screening was useful and should be continued as an adjunct to the pediatric preschool examination.

The third stage of our program recognized the limitations of end-of-kindergarten ratings or of formal assessment in fairly describing a child's ability to learn academic tasks. Therefore, a second follow-up was carried out 2 years later. This follow-up included the children who had originally been followed up at the end of kindergarten, as well as two subsequent samples. Thus, follow-up data (Peabody Individual Achievement Test [PIAT]) were obtained from children at the end of second grade, at the end of first grade, and at the end of kindergarten.[1,2]

In general, the findings across all three grades indicated that the most consistent and powerful contribution to the prediction of school achievement, as measured objectively by the PIAT as well as by subjective report of the teacher,

was the objective, preschool measures of academic skills (i.e., WRAT reading and arithmetic subtests). These data suggest that assessment procedures tapping "substrata" skills related to learning are not as predictive as the sampling of these skills as the child has applied them to the preschool incidental learning of tasks that bear relatively close resemblance to measures of achievement.

At this point, some 10 to 20 minutes were still being invested in examining each child individually. Clinical experience with parents bringing their children for evaluation had led me to have great respect for the observational and reporting skills of this set of parents. Therefore, it seemed reasonable to determine whether the same kinds of information about preschool knowledge of letters and numbers might not be obtained from parental report rather than directly from the child. The instrument selected for use was the Minnesota Child Development Inventory (MCDI).[5]

To assess the usefulness of the MCDI for this purpose, a new sample of children from a nearby community was used. At a preschool roundup before the start of kindergarten, the MCDI was completed by the parents of all children who would be starting kindergarten that year. Fifty-nine of these children (92% of the total number of children enrolled for kindergarten that year) were studied again at the end of kindergarten with the WRAT and two group tests, the Lippincott

Reading Readiness Test and the Metropolitan Reading Readiness Test.

The data were analyzed by regression techniques to determine the importance of each of the variables in predicting outcome. These variables included all of the scales of the MCDI as well as two new scales which were developed by "armchair" technique. These two scales were the Letters and Numbers scales, each labeled as such because of the primary content of the items on each scale. The parents' levels of education, the child's sex, behavior problems, and other factors were also included.

The regression analysis identified a two-variable equation that accounted for 62% of the variance of the WRAT reading score (multiple $r = 0.79$). This two-variable equation weighted the MCDI-L score with a factor from the Self-Help scale. Adding further variables did not improve predictive power significantly.

We are currently carrying out a follow-up similar to that of the earlier study. These children have now completed the second grade and their reading skills have been evaluated with a group reading test (Stanford Diagnostic Reading Test); the results will be analyzed to determine whether the preschool reports of parents can reliably predict which youngsters will have learning difficulty at the end of the second grade. The data thus far (end-of-kindergarten) are provocative because

the correlations are as strong using parental report as using the data obtained directly from the child!

## Summary

The ethical and practical issues that must be resolved by anyone undertaking the development and implementation of a preschool screening battery are formidable. Can one really justify the use of a large-scale screening program? The experiences described and the data presented in this paper illustrate something of the investment in time, money, and energy that is necessary, with the data at this point still of questionable value because of the lack of cross-validation studies. Although the data support the contention of other researchers that it is certainly possible to identify children who are at risk for school learning difficulty, the effectiveness of this screening procedure has not been compared with other approaches which might be more economical and equally effective. The use of parent questionnaires offers such a possibility because they would provide the practitioner with more information than simple referral of a child who has been identified by a well-read parent, astute nursery school director, or insightful primary grade teacher. At this point, the ability to generalize from any research data to the specific population to be considered for screening is open to great question, and validation of any screening technique,

whether using direct examination or parental reporting, must be carried out to ensure that the effectiveness reported in the normative studies applies to the population being studied.

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